
Space Weather Forecast

Issued on Tuesday, 18 June 2024 at 12:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Occasional Moderate class flares (R1-R2 radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate activity with two Moderate flares observed, the largest from the large sunspot just west of the south centre disc, along with one from a smaller and simpler region nearer the southwest limb. There are six sunspot regions visible. The large region just west of the south centre disc has shown ongoing growth with opposite magnetic polarities in close proximity, increasing its potential for notable flares. There are also two other moderately sized sunspots just west of the centre disc, however these are smaller and simpler. The three regions to the southwest are even smaller and simpler, and now becoming harder to assess due to their location.

No Earth-directed coronal mass ejections (CMEs) have been observed, with all previous CMEs mentioned on previous forecasts missing, however it is too soon to know if a CME has been released by the largest Moderate flare mentioned

Solar Wind / Geomagnetic Activity: Fast solar wind influence from a coronal hole was observed, with solar winds at increasing from slightly elevated to be elevated from around 18/0000UTC, peaking 550-600 km/s. Interplanetary Magnetic Field (IMF) was Moderate, but eased to be weak from 18/0050 UTC. The north-south component was mainly moderately negative at first, but became mainly moderately positive from 17/2040 UTC. This then eased to be weak and more variable in direction from 18/0300 UTC. Geomagnetic activity has been Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is expected with further Moderate class flares and a slight chance of Strong class flares. These most likely from the large sunspot region just west of the south-centre disc.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Current fast wind influence from the recent coronal hole is expected to ease with solar winds gradually easing towards background. There is a chance of a further enhancement later on day 4 (21 Jun), from any influence of a further coronal hole, however this is low confidence. Mainly Quiet to Unsettled geomagnetic activity is expected. There is a chance of isolated Active intervals with either of the fast wind enhancement, mainly day 1 or later day 4 (18 and 21 Jun).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background but with a chance of rising given the occurrence of any notable flares. This gives a slight chance of reaching the Minor Solar radiation Storm level (S1).

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	1	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	80	75	75	75
Very Active	R3 to R5 X	No	20	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)